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ABSTRACT

This paper explores the labor market returns to the General Education Development exam, or GED. Using new data from the Current Population Survey, it examines how the return to the GED varies between U.S. natives and the foreign-born. It finds that foreign-born men who hold a GED but received all of their formal schooling outside of the United States earn significantly more than either foreign-schooled dropouts or individuals with a foreign high school diploma. For foreign-born men with some U.S. schooling, earning a GED brings higher wages than a traditional U.S. high school diploma, although this difference is not statistically different from zero. These patterns stand in contrast to those for U.S. natives, among whom GED recipients earn less than high school graduates but significantly more than dropouts. The effects for natives appear to become larger over the life cycle and do not seem to be due to cohort effects. While it is difficult to attach a purely causal interpretation to the findings, they indicate that the GED may be more valuable in the labor market than some previous research suggests. (Contains 28 references.) (Adjunct ERIC Clearinghouse for ESL Literacy Education) (Author/SM)

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Natives, the Foreign-Born and High School Equivalents: New Evidence on the Returns to the GED

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Discussion Paper No. 477
April 2002

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ABSTRACT

Natives, the Foreign-Born and High School Equivalents: New Evidence on the Returns to the GED*

In this paper we explore the labor market returns to the General Education Development exam, or GED. Using new data from the Current Population Survey, we examine how the return to the GED varies between U.S. natives and the foreign-born. We find that foreign-born men who hold a GED but received all of their formal schooling outside of the U.S. earn significantly more than either foreign-schooled dropouts or individuals with a foreign high school diploma. For foreign-born men with some U.S. schooling, earning a GED brings higher wages than a traditional U.S. high school diploma, although this difference is not statistically significantly different from zero. These patterns stand in contrast to those for U.S. natives, among whom GED recipients earn less than high school graduates but significantly more than dropouts. The effects for natives appear to become larger over the life cycle and do not seem to be due to cohort effects. While it is difficult to attach a purely causal interpretation to our findings, they do indicate that the GED may be more valuable in the labor market than some previous research suggests.

JEL Classification: J31, J61, I2

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The degree to which the estimated return to education represents the return to a signal versus human capital has been debated since the publication of Spence's (1973) path-breaking article. One testable implication of the signaling model is the existence of "sheepskin" effects — returns to a diploma or degree over and beyond the return to an additional year of schooling. While sheepskin effects were initially discounted as a potential explanation of the returns to education (Chiswick 1973, Layard and Psacharopoulos 1974), a variety of authors (Hungerford and Solon 1987, Belman and Heywood 1991, Card and Krueger 1992, and Jaeger and Page 1996) have presented evidence of relatively large sheepskin effects in the returns to education for high school and college graduation.

In this paper we examine the returns to a high school equivalency credential, the General Education Development exam (GED), using new information from the Current Population Survey (CPS). We examine the return to the GED for a population for whom it may play a particularly important signaling role — individuals who received their formal schooling outside of the U.S. If employers lack information about the quality or content of foreign schooling, the GED may provide a way for individuals to signal that they possess (otherwise unobservable) U.S.-relevant skills.

Previous authors (Cameron and Heckman 1993, Cao, Stromsdorfer, and Weeks 1996) have argued that the labor market returns to (and sheepskin effects of) the GED are small, casting doubt on the usefulness of the GED as a substitute for a traditional high school degree. We find, however, that the wages of GED recipients (both native and foreign-born) are substantially larger and statistically significantly different from those of high school dropouts. Moreover, we find that the wages of foreign-born, foreign-schooled GED recipients are substantially *greater than* the

wages of individuals who received a traditional high school degree outside of the U.S.[1] Our results suggest that the GED, while relatively rare among the foreign-born, may be important in the assimilation of low-skilled migrants to the U.S. labor market.

While it is difficult to attach a purely causal interpretation to our findings, they support Murnane, Willett, and Tyler's (2000), and Tyler, Murnane, and Willett's (2000, 2001) conclusions that the GED may play a significant signaling role in the labor market, at least for some groups. We also present evidence that the return to the GED increases during the lifecycle. This result does not appear to be an artifact of differences between birth cohorts — when we limit our samples to men in their mid-twenties, we estimate returns to the GED that are quite similar to those estimated by Cameron and Heckman (1993) for men in the same age range but an earlier birth cohort.

In section I, we briefly discuss the role that the GED may play in the determination of wages. Section II describes our data and the newly available information on the GED in the CPS. In Section III we examine the prevalence of the GED among both natives and the foreign-born. In Section IV we present our estimates of the return to the GED, and in Section V we compare our results to those of Cameron and Heckman (1993). In Section VI we offer some conclusions.

I. The Role of the GED

The role the GED plays in the labor market is potentially multifaceted. On the one hand, individuals who take the GED might acquire significant levels of human capital in preparing for the exam. Most previous studies dismiss this possibility, citing the fact that the median amount of

[1] This is consistent with the literature on the differences between foreign and domestic schooling. In Israel, Friedberg (2000) finds that the returns to education received abroad for most groups are lower than for persons schooled in Israel. Schoeni (1997) finds that, in general, the returns to education for foreign-born men are higher if they received some of their education in the U.S. Bratsberg and Ragan (1999) present a similar finding that is robust to the inclusion of controls for proficiency in English and AFQT scores.

time spent preparing for the GED exam is quite low (only 30 hours in 1989). Over 24 percent of test-takers spend more than 100 hours preparing for the exam, however, and it is at least possible that they appreciably increase their skills in the process, leading to higher wages than they otherwise would have earned (Boesel, Alsalam, and Smith, 1998). Human capital acquisition might be especially important for migrants whose formal schooling was earned outside the U.S. if they acquire U.S.-specific skills (e.g. English language proficiency) in the process. If so, we would expect the returns to the GED to be greater for the foreign-schooled than for natives.

On the other hand, the GED might act solely as a signal to employers of greater productivity if certain U.S.-specific skills are difficult for employers to observe. To the extent that employers in the U.S. are unfamiliar with the types of high school degrees offered in foreign countries or with the quality of the schooling in those countries, we would expect the GED to have a larger credentialing effect for the foreign-schooled than for natives. Moreover, given this uncertainty, we would expect the GED to have a larger return than high school degrees earned elsewhere.

Ordinary least squares estimates of the returns to the GED may be biased, but the direction of the bias is indeterminate. The well-known omitted variables problem in estimating the return to education (Griliches 1977 and Willis 1986, among many others) may induce a correlation between wages and GED receipt that is due solely to unobserved factors such as motivation or ability and not to any causal effect of GED acquisition on earnings. The CPS lacks traditional proxies for "ability" such as test scores or parental education, and our results may suffer from omitted variable bias. The sign of this potential bias is unclear, however. Individuals who obtain a GED might simply be more motivated or possess higher (unmeasured) ability than high school dropouts. Alternatively, dropouts with greater ability might have less use for an additional credential than those who opt to take the GED.

The simple inclusion of test scores in previous studies (Cameron and Heckman 1993 and Cao, Stromsdorfer, and Weeks 1996) did not greatly alter the finding that the GED had no

significant effect on earnings. Murnane, Tyler, and Willett (2000) and Tyler, Murnane, and Willett (2001) found that the GED had little impact for men and women, respectively, who left school with high cognitive skills, but that it did significantly raise the wages of individuals in the left hand tail of the cognitive skills distribution. Exploiting a natural experiment that utilized cross-state variation in GED passing thresholds, Tyler, Murnane, and Willett (2000) found positive and significant effects of the GED on earnings. This suggests that our inability to control for ability might bias our estimates *downward*, if at all, and that any significant evidence of returns to the GED we find might in fact understate the true returns.

II. Data

Partially in response to the GED literature discussed above, the CPS began in 1997 to differentiate between high school graduates who received their credential via a traditional diploma and those who were certified via the GED.[2] Beginning in January 1997, individuals who reported that their highest degree received was a "high school... diploma or equivalent (GED)" were asked whether they received this degree via graduation from high school or a "GED or other equivalent."[3] GED recipients were also asked their highest level of education attained prior to receiving the GED. We assign 12th grade completion to individuals who received a traditional high school degree. Because of international differences in secondary school curricula, this category may be measured with some error.

The CPS began collecting information on the country of birth and citizenship status of respondents in 1994. Combined with the new information on the GED, the CPS is the only data set we know of that permits an examination of the effects of the GED for the foreign-born. The

[2] Public-use data on the GED are available beginning in 1998. Before 1997 information on the GED in the CPS was only available in periodic supplements.

[3] Jaeger (2002a) describes the other additions to the CPS education questions.

CPS also permits the examination of returns to the GED for a wider age range than that examined in previous studies. We will utilize this feature of the data, combined with results from Cameron and Heckman (1993), who use data from the NLSY, to examine changes over the life cycle in the returns to the GED. Unlike the NLSY, however, the CPS only has information on the highest level of education an individual received, and we are unable to identify GED recipients among those who completed some college or more. This prevents us from exploring a separate set of interesting questions regarding the use of the GED as a "stepping stone" to post-secondary education.[4] An additional advantage of the new data from CPS is the large sample size — our sample is more than 20 times the size of those analyzed in most previous studies.[5]

Our data are drawn from four years of the CPS Outgoing Rotation Groups from January 1998 through December 2001.[6] Our sample comprises individuals between the ages of 20 and 64 who received a high school degree (either traditional or GED) or less.[7] We restrict the sample of

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[4] See Boesel, Alsalam, and Smith (1998) for an overview of the literature on post-secondary outcomes of GED recipients.

[5] Tyler, Murnane, and Willett (2000) is a notable exception, although their primary source of data does not include information on traditional high school graduates.

[6] The CPS is structured so that households are interviewed for four consecutive months, not interviewed for the next eight months, and then interviewed for four more consecutive months. The CPS outgoing rotation groups comprise individuals in their forth and eighth months of the survey. In order to avoid having a particular individual appear in our sample twice, we use only those who are in their fourth month of the survey, except for the first year, for which we take individuals who are in either their fourth or eighth month. Data were obtained from the BLS/Census web site at http://www.bls.census.gov/cps.

[7] The full set of our sample exclusion criteria: individuals with more than a high school education; individuals younger than twenty or older than sixty-four at the time of the survey; foreign-born who cannot be firmly classified as having some formal U.S. schooling or as having only foreign formal schooling; foreign-born who entered the U.S. prior to 1965; foreign-born whose country of birth was not identified (i.e. "Other"); those living in Alaska or Hawaii; those whose ethnicity is American Indian, Aleut, or Eskimo; those born abroad to U.S. parents or born in outlying; and those whose education was allocated. In addition, we exclude Canadians, as Canada also offers the GED and could confound our exploration of the returns to the GED as a post-migration credential. Because the remaining non-Mexican North American sample is extremely small (approximately 30 individuals, mostly from Bermuda) we drop them as well. Our regression samples exclude individuals whose wages were less than $1 or greater than $200 per hour and

foreign-born individuals to those who entered the U.S. after the 1964 changes in immigration law that introduced the system of family reunification and employment visas that essentially prevails today. We also include only the foreign-born that we can firmly identify as having completed some schooling in the U.S. or completing all of their schooling abroad.[8]

III. The Prevalence of GED Receipt

Table 1 presents the distribution of high school dropouts, GED recipients, and traditional high school graduates in our data (these categories are defined to be mutually exclusive). Statistics for U.S. native men and women are displayed in the top panel, foreign-born men and women who received some U.S. schooling are in the middle panel, and foreign-born, foreign-schooled men and women are shown in the bottom panel. Within sex × race/ethnicity groups, the foreign-born, foreign-schooled are least likely to have attained a traditional high school diploma. Somewhat surprisingly, the foreign-born that received some U.S. schooling about as likely to have completed a traditional high school diploma as natives. Native dropouts, as a whole, are more than twice as likely as the foreign-born with some U.S. schooling to earn a GED, and about eight times as likely as the foreign-born, foreign-schooled to get a GED.

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individuals who reported that they were either self-employed or worked without pay in their main job.

[8] Because both low levels of schooling and the year of entry to the U.S. are coded in brackets in the CPS, we are not able to identify precisely where some individuals completed their schooling. We use the year of entry and age to identify the minimum and maximum number of years the individual could have spent in the U.S. We also use the years-of-schooling variable to identify the minimum and maximum years of schooling that the individual could have received for the 1st–4th grade, 5th–6th grade, and 7th–8th grade categories. We code individuals as "foreign-born, foreign-schooled" (i.e. no formal U.S. schooling) if (age - maximum years in U.S. - 6)>maximum years of schooling. Similarly, we code individuals as "foreign-born, some U.S. schooling" if (age- minimum years in U.S. - 6)<minimum years of schooling. We exclude from the sample individuals who were born abroad but who do not meet one of these criteria. Approximately 10 percent of the foreign-born fall into the "indeterminate" category, while approximately 16 percent fall into the "foreign-born, some U.S. schooling" category, and the vast majority are categorized as "foreign-born, foreign-schooled."

There is substantial variation across race/ethnicity groups, however, in the incidence of the GED among dropouts. Foreign-born, foreign-schooled Hispanic dropouts are about ten times less likely than native Hispanic dropouts to earn a GED, while native black non-Hispanic dropouts are only about 1.5 times as likely as their foreign-born, foreign-schooled counterparts to earn a GED. Natives are most likely to have earned their high school credential via the GED, with roughly 10 percent of our sample doing so. Among the foreign-born, those who entered the U.S. at an age early enough to have completed some U.S. schooling are generally more likely to have received a GED than those who entered after completing all of their formal schooling, although these differences tend to be relatively small.

The differences across race/ethnicity groups in the likelihood of receiving a GED are reflected in the distribution of educational attainment by region of national origin shown for the foreign-born in Table 2.[9] For all region-of-birth groups, foreign-schooled dropouts are less likely to earn a GED than those who received some U.S. education. But there is substantial variation across regions. Africans are more likely to have a traditional high school diploma than other groups, and are also more likely to have received a GED. Mexicans are the least likely to have a traditional high school diploma among the groups, and Mexican dropouts are the least likely to earn a GED in the U.S. Mexicans with a high school credential, however, are as or more likely than most other groups to have earned that credential via the GED.

Migrants to the U.S. are likely to have a higher incidence of English-language ability than their non-migrating countryfolk. Nevertheless, there appears to be a relationship between GED receipt and whether English is spoken in the country of birth of the foreign-born. Foreign-born, foreign-schooled dropouts who were born in English-speaking countries are substantially more likely to earn a GED than those who were born in non-English-speaking countries. The foreign-born, foreign-schooled from English-speaking countries are also more likely to earn their high

[9] Because of the relatively small number of foreign-born GED recipients in our sample, we are not able use a finer level of geographic detail.

school credential via the GED than those from non-English-speaking countries.[10] Among the foreign-born with some U.S. schooling, the GED is as prevalent among those from non-English-speaking countries as those from English-speaking countries, but those GED recipients from English-speaking countries are a larger share of dropouts and a smaller share of high school credential holders.

As shown in Table 3, recent entry cohorts are more likely to possess a traditional high school degree. Those with some U.S. schooling are more likely than the foreign-born, foreign-schooled to have a traditional high school degree, although the percentage change across cohorts in this incidence is substantially larger among the foreign-born, foreign-schooled. This may be in part due to selective out-migration of the less skilled among earlier cohorts, although previous evidence is mixed (Betts and Lofstrom 2000). The incidence of GED receipt also declines across entry cohorts. This effect is partly due to the fact that earlier foreign-born cohorts have had a longer time in the U.S. to earn a GED.

While the GED is considered a high school equivalency degree, the amount of formal schooling that GED recipients complete is typically somewhat less than the usual twelve years that it takes to complete a traditional high school degree. In Table 4 we present the distribution of formal educational attainment of GED recipients and dropouts among both natives and the foreign-born. The table shows that for all groups, GED recipients complete, on average, about ten years of schooling.[11] Compared to natives, however, both the foreign-born groups (but especially

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[10] Note that, unlike the decennial Census, the CPS does not ask respondents about the language spoken in their home. Categories of the CPS country-of-birth variable for which English is the primary or official language are American Samoa, Australia, the Bahamas, Belize, the Caribbean, Dominica, Fiji, Ghana, Great Britain, England, Guyana, India, Ireland/Eire, Jamaica, New Zealand, Nigeria, Northern Ireland, Pakistan, the Philippines, Puerto Rico, Scotland, South Africa, and Trinidad and Tobago. Canada and Bermuda would also be classified as English-speaking countries, but, as noted above, we exclude non-Mexican North Americans from our samples.

[11] Years of schooling are imputed from the categorical primary CPS education question using the scheme proposed by Jaeger (1997).

the foreign-schooled) are more likely to report having completed 12 years without earning a diploma. This raises the possibility that some of the foreign-born, foreign-schooled who report possessing a GED may also have earned a traditional high school diploma outside the U.S., although there is no way to verify whether this is so. Foreign-born dropouts with some U.S. schooling and without a GED complete about half a year more of schooling than their native counterparts, while the foreign-born, foreign-schooled dropouts complete substantially less schooling than either of the other groups.

IV. Returns to the GED

We turn now to our estimates of the wage returns to the GED. In Tables 5a (men) and 5b (women) we present results of OLS regressions of log hourly wages on schooling, estimated separately for natives, the foreign-born with some U.S. schooling, and the foreign-born, foreign-schooled.[12] Because dropping out, receiving a GED, or receiving a traditional high school diploma is very likely to be correlated with a variety of background characteristics that also affect earnings, we include a broad set of control variables in the regressions. In all regressions we include a quadratic in potential labor market experience, a dummy variable for being married with the spouse present, 9 dummy variables each for father's and mother's world region of birth, a fourth-order polynomial in calendar time (measured in months from January 1998) to control for business cycle effects, dummy variables for each month of the year to address seasonal effects, and dummy variables for state of residence, non-central city, and non-metropolitan area residence.[13] Where appropriate, we include race/ethnicity dummy variables for non-Hispanic

[12] Individuals in the outgoing rotation data can give their earnings or wages in a variety of ways. To calculate hourly wages, we follow the algorithm outlined in Appendix B of Polivka (1997).

[13] Potential labor market experience is measured as age - imputed years of schooling - 6. World regions of birth correspond to those in Table 2 plus an additional category for those reporting "Other."

black, Hispanic, and Asian. Regressions for the foreign-born groups also include dummy variables for U.S. citizenship, having been born in an English-speaking country, world region of birth, and dummy variables for 10 entry cohorts. Reported standard errors are heteroskedasticity-consistent and estimated via the bootstrap with 500 replication and never differ from those calculated by the Huber-White method by more than .001. Descriptive statistics of the dependent and independent variables for the regression samples of all natives and both foreign-born groups are shown in Appendix Tables 1a and 1b, for men and women, respectively.

The top panel presents results of a regression of log wages on a dummy variable indicating GED receipt, a dummy variable representing high school graduation, and the aforementioned covariates.[14] The coefficients therefore represent the conditional mean of log wages of GED and traditional high school diploma recipients relative to that of high school dropouts. Both native men and native women with a GED earn approximately 8 percent less than their counterparts with a high school diploma; these differences are statistically significantly different from zero. The estimated traditional high school diploma - GED difference varies somewhat across race/ethnicity groups, with non-Hispanic blacks having the smallest difference for both men and women.[15]

For the foreign-born, the pattern is generally reversed. The GED premium for foreign-born, foreign-schooled men is nearly twice as large as that for native men, while for women this premium is about 50 percent larger. Moreover, because the high school premium is lower for the foreign-born, foreign-schooled than for natives, the traditional high school diploma - GED difference is *negative* for the foreign-born, foreign-schooled. This difference is statistically significant for foreign-born, foreign-schooled men at the 5 percent level but not at any conventional level for women. For the foreign-born with some U.S. schooling, the relative return to the GED and traditional high school diploma is different for men and women. For men, GED

[14] Full results of the regressions are available from the authors by request.

[15] There are too few native Asians to estimate a separate regression for them. Asians are included in the "all natives" columns.

holders earn more than those with a traditional high school diploma, while for women the opposite is true.

As shown in Table 4, there is substantial variation across groups in the amount of formal schooling obtained by dropouts and GED recipients prior to receiving the GED. Because foreign-schooled dropouts have substantially less education than those who receive a GED, part of the difference in conditional mean wages between these groups may simply be due to differences in formal schooling levels. In the middle panel of Table 5, we add dummy variables for all levels of the CPS completed education question (0, 1–4, 5–8, 9, 10, and 11) to the specification of the top panel. This specification is similar to that of Jaeger and Page (1996), where the coefficients on the indicators for GED receipt and high school diploma receipt can be interpreted as "sheepskin" effects. The bottom panel of Table 5 presents differences in the GED and high school coefficients between the two models as well as the difference in the high school - GED difference between the two models. The standard errors on these differences are computed by drawing 500 replicates, estimating both models, calculating the difference between the coefficients (or difference in difference between coefficients) of interest between the two models, and then calculating the bootstrap standard error based on those replications. This procedure is akin to performing a Hausman-Wu test on the statistical difference between the two models and takes into account that we are estimating both models with the same data (i.e. that the estimates are not independent of one another). In this case, we test whether we can statistically distinguish between the estimated returns to the degree variables between the two models. Jaeger (2002b) explores this testing procedure in greater detail.

For natives, controlling for formal schooling still yields positive and statistically significant effects of receiving both the GED and a traditional high school diploma. The magnitude of the GED effect falls less than one percentage point for all groups except Hispanics, while the high school diploma effect falls by substantially more, both in levels and as a percentage of the high school diploma effect in Model 1. Combined, these changes lead to a

substantial decrease in the high school - GED difference for all native groups, particularly non-Hispanic blacks. For all native groups except Hispanic women, we can reject the null hypothesis that the estimated high school - GED difference is the same in both models. Moreover, when controlling for years of schooling we cannot reject the null hypothesis that the returns to the GED and a traditional high school diploma are the same for all native groups except non-Hispanic white men.

For all four foreign-born groups we also find that the estimated high school diploma premium fell when we added years of schooling to the model. The estimated GED premium also fell for all four groups, although not by as much as the high school diploma effect. The magnitude of the high school - GED difference therefore decreased (i.e. got more negative or less positive) across models when we added the schooling dummy variables, but we cannot reject the hypothesis that the difference was the same across the models.

Taken as a whole, these results suggest that wages of GED recipients are closer to those of traditional high school recipients than to dropouts. They stand in contrast to the findings of Cameron and Heckman (1993) and Cao, Stromsdorfer, and Weeks (1996), who find no statistically significant sheepskin effects of the GED for men or women, respectively. Our results are closer to the findings of Tyler, Murnane, and Willet (2000) who found positive and significant sheepskin effects for the GED of roughly the same magnitude in log annual earnings regressions after controlling for ability differences as measured by GED test scores.

While our results, particularly for the foreign-born, foreign-schooled, suggest that obtaining a GED may be a path towards higher earnings, there are also a variety of reasons to be cautious in our conclusions. As is usually the case with estimating the returns to education via OLS, omitted variables and/or measurement error may lead to bias in our estimates. This may be particularly true for the foreign-born, for whom there are a variety of unmeasured characteristics (in particular, English language ability) that may be correlated both with earnings and with the

propensity to receive a GED.[16] As noted by Kane and Rouse (1999) and Kane, Rouse, and Staiger (1999), if completed years of schooling are measured with more error than degree completion, OLS estimates of "sheepskin" effects will overstate the true value of degree completion. It is also possible that, given global differences in educational systems, traditional high school completion is measured with more error than GED receipt for the foreign-born, foreign-schooled, which could induce the "inversion" we observed in the estimated relative returns.

V. Reconciling Our Findings with Previous OLS Results

Our finding of a positive and significant sheepskin effect for the GED is at odds with other OLS estimates in the literature (e.g. Cameron and Heckman 1993 and Cao, Stromsdorfer, and Weeks 1996), and more similar to the results of Tyler, Murnane, and Willett (2000), who were able to more fully control for unobserved ability than we can. *Ex ante*, we would have expected our results to be closer to Cameron and Heckman and Cao et al. than to Tyler, Murnane, and Willett.

There are several possible explanations for why our results are so different from those of Cameron and Heckman and Cao et al. First, our sample consists of individuals aged 20 to 64, while those of the previous studies consisted of individuals under the age of 28. If we think that the effects of the GED might grow in significance over the life cycle, then the returns we estimate, which reflect the average effect of the GED for individuals between the ages of 20 and 64, should exceed the returns to the GED estimated in previous studies. Second, the low returns

[16] Of course, the highest-ability migrants might find it unnecessary to earn a GED or might already possess a traditional high school diploma, which would bias our estimates of the relative return to the GED downward.

to the GED observed by Cameron and Heckman and Cao et al. may have been specific to the cohort that they examined.

To explore these issues, in Table 6 we present estimates from models similar to those estimated by Cameron and Heckman using the NLSY of the effects of GED and high school diploma receipt. In the top panel we include dummy variables for race/Hispanic origin and the year in which the survey was fielded; in the bottom panel we add dummy variables for years of education completed. The first two columns present results for men who were twenty-five years old at the time of the survey (1998–2001 for our results in the CPS, and 1982–87 for Cameron and Heckman's, from the first column of their Table 9).[17] The second two columns present results for men who were 28 years old at the time of the survey (Cameron and Heckman's results come from their Table 15). Note that our samples comprise only native men with a high school education or less, while Cameron and Heckman's samples consist of men with all levels of education. Our results should be roughly comparable, however, because Cameron and Heckman include variables for levels of education greater than 12 years.

In the top panel, our results and Cameron and Heckman's are remarkably similar, particularly for 25 year olds. Both the NLSY and CPS show that there is a positive, but not statistically significant, return to the GED and a statistically significant return to a traditional high school diploma. The estimated high school - GED difference is somewhat bigger in our samples than in Cameron and Heckman's, but the results are roughly comparable.

When we control for years of schooling in the bottom panel, our results diverge somewhat from Cameron and Heckman's. Our estimated return to years of schooling is smaller than Cameron and Heckman's, and the estimated GED and high school diploma premia also drop by less when we add the years of schooling measure. Here, the differences in samples may be in part responsible for the differences in results. The years of schooling variable in Cameron and

[17] Standard errors from Cameron and Heckman's results are those implied by their reported coefficients and *t* ratios.

Heckman's model reflects not only variation among high school diploma and GED recipients but also among those with a college education. If the marginal return to an additional year of college or post-graduate study is greater than the marginal return to a year of primary or secondary school, then we would expect the estimated return in Cameron and Heckman's sample (the average return across all years of schooling, conditional on degree receipt) to be greater than the estimated return in our sample (the average return across all years of primary and secondary school, conditional on degree receipt). In neither sample can Cameron and Heckman reject the null hypothesis that the diploma effects for high school and the GED are the same, while for 28 year olds we find a positive and statistically significant difference between the high school diploma and GED premia. Like Cameron and Heckman's results, our results suggest that, for 25 and 28 year olds, the GED and the high school degree are not equivalent and that GED recipients' wages are closer to those of dropouts. In no case can we reject the null hypothesis that the GED premium over dropping out is equal to zero among 25 and 28 year olds.

The last two columns of Table 6 show estimates of the same model for the birth cohorts that Cameron and Heckman examined, i.e. men who were 25 or 28 years old in 1982–87. For both groups, we find substantially higher returns to the GED and high school diploma receipt than Cameron and Heckman, with the returns to the GED recipients falling more than halfway between those for dropouts and high school graduates. Because the returns to the GED grew faster than those for the high school diploma, our results for Cameron and Heckman's cohorts suggest that GED recipients do "catch up" somewhat to those with a high school diploma over time. These findings hold when we control for years of schooling as well; we find statistically significant degree effects for GED receipt and a decrease in the high school - GED difference over the roughly fifteen years between Cameron and Heckman's estimates and ours. Taken together, these

results suggest that there may be substantial benefits to holding a GED that are not manifested early in the life cycle.[18]

VI. Conclusion

We conclude from these results that, while the GED may not yield wages that are equivalent to those of traditional high school graduates among U.S. natives, GED recipients do appear to earn more than observationally similar dropouts. For the foreign-born who received some schooling in the U.S., returns to the GED are not statistically different from the returns to a traditional high school diploma (presumably earned in the U.S.). For foreign-born men and women who received their formal schooling outside of the U.S., holding a GED -- a recognized U.S. credential — seems to lead to substantially higher wages than a traditional high school diploma earned outside the U.S., and for men these results are statistically significant. Our results are robust to controlling for years of schooling, indicating that a fair portion of the return to the GED and a traditional high school diploma may be due to sheepskin effects. While Tyler, Murnane, and Willett (2000), exploiting a natural experiment that allows them to control for unobserved differences between dropouts and GED recipients, present similar findings, we are cautious about attaching a purely causal interpretation to our results.

The inclusion of a broader age range in our samples appears to explain the differences between our estimates and those of Cameron and Heckman (1993) and Cao, Stromsdorfer, and Weeks (1996). We find that the returns to the GED appear to increase with age. When examining the same cohorts as Cameron and Heckman (1993) (who found little evidence of significant returns to the GED) 11 to 19 years after the data used in their study, we find large and

[18] Tyler (2001) has recently documented that individuals who pass the GED have faster wage growth than individuals who attempt the GED test but fail. This result is robust to a variety of controls for unobserved heterogeneity. Tyler, Murnane, and Willett (2000), among others, have also documented that the benefits of the GED may take some time to become apparent.

statistically significant returns to the GED. While GED recipients' wages are not equivalent to those of traditional high school degree recipients later in life, neither are their wages the same as high school dropouts. We find that this is true even when we control for years of completed schooling.

Whether our results represent the presence of signaling in the labor market for low-skilled workers is, of course, open to debate. We find it plausible, however, that firms would take a U.S.-specific credential like the GED as a greater signal of productivity in the U.S. labor market than a traditional high school degree earned elsewhere. Further progress on these issues for the foreign-born will require additional data on the ability of individuals (e.g. test scores and English-language skills), the qualities of schools that they attended, and greater detail on the timing of their migration and post-migration schooling decisions.

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Table 1

Educational Attainment of Individuals with High School Diploma or Less

Education Group	Men					Women				
	All	White Non-Hispanic	Black Non-Hispanic	Hispanic	Asian	All	White Non-Hispanic	Black Non-Hispanic	Hispanic	Asian
				Natives						
Dropouts: No GED	.234	.209	.295	.381	.160	.217	.182	.303	.390	.183
Dropouts: GED	.088	.091	.069	.101	.067	.078	.079	.064	.096	.044
Traditional High School Diploma	.678	.700	.636	.519	.773	.706	.739	.632	.514	.773
GED Share of Dropouts	.274	.304	.190	.209	.296	.263	.303	.175	.197	.195
GED Share of those with H.S. Credentials	.115	.115	.098	.163	.080	.099	.096	.092	.157	.054
Share of Natives	.492	.381	.076	.033	.002	.509	.387	.085	.036	.001
Sample size	94,158	76,841	11,583	5,476	258	100,213	79,434	14,483	6,043	253
				Foreign-Born, Some U.S. Schooling						
Dropouts: No GED	.366	.247	.248	.424	.189	.343	.217	.215	.405	.188
Dropouts: GED	.044	.046	.073	.040	.046	.039	.044	.035	.039	.036
Traditional High School Diploma	.591	.707	.679	.536	.765	.618	.739	.750	.556	.776
GED Share of Dropouts	.107	.157	.227	.086	.196	.102	.170	.141	.088	.161
GED Share of those with H.S. Credentials	.069	.061	.097	.070	.057	.059	.057	.045	.066	.044
Share of Foreign-Born, Some U.S. Schooling	.551	.062	.041	.388	.060	.449	.053	.035	.309	.051
Sample size	2,492	317	153	1,733	289	2,108	286	158	1,413	251
				Foreign-Born, Foreign-Schooled						
Dropouts: No GED	.650	.362	.431	.780	.402	.608	.325	.416	.768	.421
Dropouts: GED	.019	.029	.052	.015	.020	.021	.025	.055	.015	.023
Traditional High School Diploma	.331	.610	.517	.205	.579	.375	.650	.529	.217	.557
GED Share of Dropouts	.028	.073	.108	.019	.047	.033	.072	.116	.020	.051
GED Share of those with H.S. Credentials	.054	.045	.092	.070	.033	.052	.037	.094	.066	.039
Share of Foreign-Born, Foreign-Schooled	.492	.057	.031	.347	.057	.508	.067	.036	.315	.091
Sample size	11,402	1,498	708	7,803	1,393	10,500	1,787	882	7,343	2,187

Source: Calculations using weighted CPS Outgoing Rotation Groups from January 1998-December 2001.

Note: See text for subsample definitions.

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Table 2

Educational Distribution of Foreign-Born with a High School Diploma or Less by Region of Birth

Country or Region	Dropouts		Traditional H.S. Diploma	GED Share of		Share of Group	*Sample size*
	No GED	GED		Drop-outs	H.S. Cred.		
			Foreign-Born, Some U.S. Schooling				
Mexico	.467	.037	.496	.073	.069	.492	2,163
Central America	.305	.042	.653	.120	.060	.227	1,055
South America	.191	.060	.749	.239	.074	.064	294
Europe	.232	.046	.722	.165	.060	.080	430
Asia	.195	.040	.765	.171	.050	.125	592
Africa	.084	.139	.777	.625	.152	.007	37
Oceania	.121	.131	.748	.520	.149	.005	29
English-speaking	.169	.048	.783	.222	.058	.101	420
Non-English-speaking	.375	.041	.584	.099	.066	.899	4,180
Sample size	1,604	197	2,799				4,600
			Foreign-Born, Foreign-Schooled				
Mexico	.846	.012	.142	.014	.080	.456	10,179
Central America	.635	.028	.337	.043	.078	.218	5,279
South America	.359	.032	.609	.082	.050	.062	1,502
Europe	.310	.034	.655	.100	.050	.079	2,136
Asia	.411	.018	.571	.042	.031	.166	4,057
Africa	.246	.050	.704	.170	.067	.014	347
Oceania	.288	.014	.698	.045	.019	.005	100
English-speaking	.324	.044	.632	.120	.065	.093	2,118
Non-English-speaking	.675	.018	.307	.026	.055	.907	21,482
Sample size	14,965	495	8,140				23,600

Source: Calculations using weighted CPS Outgoing Rotation Groups from January 1998-December 2001.

Notes:

1) See text for subsample definitions.

2) English-speaking countries include American Samoa, Australia, the Bahamas, Belize, the Caribbean, Dominica, Fiji, Ghana, Great Britian, England, Guyana, India, Ireland/Eire, Jamaica, New Zealand, Nigeria, Northern Ireland, Pakistan, Philipines, Scotland, South Africa, and Trinidad & Tobago. Individuals born in Canada and North American countries other than Mexico are excluded from this sample.

Table 3

Educational Distribution of Foreign-Born with a High School Diploma or Less by Cohort of Entry to US

Entry Cohort	Dropouts: No GED	Dropouts: GED	Traditional H.S. Diploma	GED Share of: Drop-outs	GED Share of: H.S. Cred.	Share of Group	*Sample size*
			Foreign-Born, Some U.S. Schooling				
1965-1979	.354	.057	.588	.139	.089	.428	1,917
1980-1989	.374	.035	.592	.085	.055	.420	1,936
1990-2001	.311	.021	.669	.062	.030	.151	747
Sample size	1,604	197	2,799				4,600
			Foreign-Born, Foreign-Schooled				
1965-1979	.689	.027	.284	.037	.086	.204	4,665
1980-1989	.656	.021	.324	.030	.060	.355	8,291
1990-2001	.615	.017	.368	.027	.045	.441	10,644
Sample size	14,965	495	8,140				23,600

Source: Calculations using weighted CPS Outgoing Rotation Groups from January 1998-December 2001.
Note: See text for subsample definitions.

Table 4

Highest Grade Completed by High School Dropouts

	Natives				Foreign-Born, Some U.S. Schooling				Foreign-Born, Foreign-Schooled			
	Men		Women		Men		Women		Men		Women	
Education level	**No GED**	**GED**	**No GED**	**GED**	**No GED**	**GED**	**No GED**	**GED**	**No GED**	**GED**	**No GED**	**GED**
Less than 1st grade	.014	.016	.013	.014	.002	.012	.000	.021	.060	.042	.061	.022
1st-4th grade	.019	.001	.015	.001	.012	.000	.003	.000	.159	.011	.157	.019
5th-6th grade	.039	.004	.032	.004	.064	.000	.053	.000	.345	.050	.339	.056
7th-8th grade	.142	.053	.135	.063	.067	.024	.088	.018	.141	.078	.154	.089
9th grade	.142	.110	.141	.127	.133	.051	.150	.070	.131	.101	.128	.080
10th grade	.240	.268	.253	.303	.193	.262	.220	.207	.068	.141	.065	.120
11th grade	.290	.392	.308	.372	.276	.363	.292	.336	.047	.149	.044	.197
12th grade, no diploma	.114	.155	.102	.117	.252	.288	.195	.347	.050	.428	.051	.417
Mean years of schooling	9.6	10.3	9.6	10.2	10.1	10.7	10.1	10.7	6.3	10.0	6.3	10.1
Sample size	21,253	8,371	20,749	7,866	895	106	709	91	7,473	234	7,492	261

Source: Calculations using weighted CPS Outgoing Rotation Groups from January 1998-December 2001.

Notes:

1) See text for subsample definitions.

2) Years of schooling imputed following Jaeger (1997).

Table 5a

Ordinary Least Squares Regressions for Log Wages for Men

(Heterokedasticity-consistent standard errors in parentheses)

	Natives				Foreign-born	
	All	White Non-Hisp.	Black Non-Hisp.	Hispanic	Some US Schooling	Foreign-Schooled
	Model 1: No Years of Schooling Controls					
	(Reference group is high school dropouts)					
High School Diploma	.220	.218	.213	.245	.113	.161
	(.005)	(.006)	(.014)	(.016)	(.023)	(.012)
GED	.139	.139	.146	.125	.167	.247
	(.007)	(.009)	(.024)	(.027)	(.055)	(.041)
High School Diploma - GED	.081	.079	.066	.121	-.054	-.086
	(.007)	(.008)	(.021)	(.025)	(.054)	(.040)
Adjusted R^2	.205	.184	.147	.222	.179	.191
	Model 2: Dummy Variables for Years of Schooling					
	(Reference group is high school dropouts who completed 12 years of school)					
High School Diploma	.173	.184	.145	.156	.073	.126
	(.011)	(.013)	(.027)	(.032)	(.034)	(.028)
GED	.131	.133	.142	.096	.143	.229
	(.008)	(.009)	(.024)	(.027)	(.056)	(.042)
High School Diploma - GED	.042	.051	.003	.060	-.070	-.102
	(.011)	(.014)	(.031)	(.034)	(.056)	(.044)
Adjusted R^2	.207	.186	.148	.232	.193	.193
	Bootstrap Test of Equality Across Models: Model 1 - Model 2 Difference					
High School Diploma	.047	.034	.068	.089	.040	.035
	(.009)	(.011)	(.023)	(.028)	(.026)	(.023)
GED	.008	.007	.005	.029	.024	.018
	(.002)	(.002)	(.004)	(.007)	(.011)	(.010)
High School Diploma - GED	.039	.027	.064	.061	.016	.016
	(.009)	(.011)	(.022)	(.025)	(.027)	(.017)
Sample size	63,763	52,632	7,020	3,937	1,945	8,862

(continued)

Table 5b

Ordinary Least Squares Regressions for Log Wages for Women
(Heterokedasticity-consistent standard errors in parentheses)

	Natives				Foreign-born	
	All	White Non-Hisp.	Black Non-Hisp.	Hispanic	Some US Schooling	Foreign-Schooled
	Model 1: No Years of Schooling Controls (Reference group is high school dropouts)					
High School Diploma	.235	.238	.202	.272	.195	.183
	(.005)	(.006)	(.011)	(.016)	(.027)	(.014)
GED	.161	.156	.150	.205	.119	.229
	(.008)	(.009)	(.021)	(.025)	(.059)	(.041)
High School Diploma - GED	.075	.083	.051	.066	.077	-.046
	(.007)	(.008)	(.018)	(.025)	(.056)	(.042)
Adjusted R^2	.140	.123	.149	.187	.199	.167
	Model 2: Dummy Variables for Years of Schooling (Reference group is high school dropouts who completed 12 years of school)					
High School Diploma	.165	.160	.143	.245	.146	.136
	(.012)	(.015)	(.024)	(.035)	(.047)	(.027)
GED	.158	.154	.153	.196	.098	.202
	(.008)	(.009)	(.021)	(.025)	(.060)	(.042)
High School Diploma - GED	.006	.006	-.010	.049	.048	-.066
	(.014)	(.015)	(.028)	(.037)	(.070)	(.045)
Adjusted R^2	.142	.125	.150	.189	.204	.168
	Bootstrap Test of Equality Across Models: Model 1 - Model 2 Difference					
High School Diploma	.071	.079	.058	.027	.049	.047
	(.011)	(.012)	(.021)	(.030)	(.037)	(.025)
GED	.002	.002	-.003	.010	.021	.027
	(.001)	(.001)	(.003)	(.004)	(.013)	(.010)
High School Diploma - GED	.068	.077	.061	.017	.029	.020
	(.011)	(.013)	(.021)	(.030)	(.033)	(.018)
Sample size	58,572	46,787	8,147	3,481	1,223	5,774

Source: Calculations using weighted CPS Outgoing Rotation Groups from January 1998-December 2001.
Notes:

1) See text for subsample definitions.

2) Both models include potential experience and potential experience squared, as well as a quartic in calendar time from January 1998 and dummy variables for MSA/central city status, state of residence, married with spouse present, month of year, and world regions of parental birth. Except for regressions for specific race/ethnic groups, all models include dummy variables for race/ethnicity. Regressions for foreign-born include dummy variables for entry cohort, world region of birth, U.S. citizenship, and birth in English-speaking country.

3) Model 2 includes dummy variables for CPS categories of years of completed education.

4) All standard errors calculated using the bootstrap with 500 replications.

Table 6

Ordinary Least Squares Regressions for Log Wages:
Comparison of Clark & Jaeger (CPS) with Cameron & Heckman (NLSY) Estimates
(Heteroskedasticity-consistent standard errors in parentheses)

	25-year-old men		28-year-old men		CPS Estimates for NLSY Cohorts	
	CPS (1998-2001)	NLSY (1982-87)	CPS (1998-2001)	NLSY (1982-87)	Men who were 25 in 1982-87	Men who were 28 in 1982-87
	Model 1: No Control for Years of Schooling (Reference group is high school dropouts)					
High School Diploma	.163	.144	.171	.174	.248	.277
	(.034)	(.022)	(.033)	(.037)	(.009)	(.010)
GED	.065	.060	.004	.062	.180	.208
	(.056)	(.040)	(.047)	(.062)	(.016)	(.016)
High School Diploma - GED	.097	.084	.167	.112	.068	.068
	(.048)	(.036)	(.039)	(.054)	(.014)	(.014)
	Model 2: Control for Years of Schooling (Reference group is high school dropouts)					
Years of School	.015	.057	.020	.034	.020	.019
	(.016)	(.011)	(.015)	(.014)	(.003)	(.003)
High School Diploma	.136	-.009	.136	.080	.197	.224
	(.048)	(.030)	(.046)	(.057)	(.012)	(.013)
GED	.065	-.016	-.002	.015	.163	.187
	(.055)	(.023)	(.049)	(.038)	(.016)	(.016)
High School Diploma - GED	.071	.007	.138	.065	.034	.037
	(.056)	(.011)	(.042)	(.052)	(.015)	(.015)
Sample size	1,435	2,308	1,550	1,016	20,689	19,445

Sources:

Clark and Jaeger: Calculations using weighted CPS Outgoing Rotation Groups from Jan. 1998-Dec. 2001.

Cameron and Heckman: Calculations from National Longitudinal Survey of Youth, 1982-1987.

Notes:

1) All models include dummy variables for race, Hispanic origin, and year of survey.

2) Standard errors calculated using the Huber-White method.

Appendix Table 1a

Descriptive Statistics for Regression Samples for Men

	Natives		Foreign-Born			
			Some U.S. Schooling		Foreign-Schooled	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Wages						
Log(wage)	2.5076	.4790	2.2827	.4494	2.2116	.4443
Wage	13.7920	7.3852	10.9544	6.2702	10.2023	5.9663
Education						
GED	.0870	.2818	.0449	.2071	.0211	.1436
High School Diploma	.7221	.4479	.5941	.4911	.3024	.4593
Less than 1st grade	.0022	.0470	.0017	.0416	.0372	.1893
1st - 4th grade	.0020	.0445	.0048	.0688	.1045	.3060
5th - 6th grade	.0057	.0752	.0202	.1407	.2404	.4273
7th - 8th grade	.0257	.1582	.0258	.1585	.0949	.2930
9th grade	.0350	.1838	.0487	.2153	.0975	.2966
10th grade	.0710	.2568	.0886	.2842	.0484	.2147
11th grade	.0964	.2952	.1098	.3126	.0351	.1840
12th grade	.7620	.4258	.7004	.4581	.3420	.4744
Race						
White Non-Hispanic	.7862	.4100	.0945	.2926	.0952	.2935
Black Non-Hispanic	.1398	.3467	.0666	.2494	.0627	.2424
Hispanic	.0712	.2571	.7373	.4401	.7399	.4387
Asian	.0029	.0538	.1016	.3021	.1022	.3029
Potential Experience	21.2382	11.6416	10.7819	6.3048	24.1657	11.0894
Potential Experience^2/100	5.8659	5.4937	1.5600	1.6680	7.0696	6.0180
U.S. Citizen	--	--	.3257	.4686	.1963	.3972
Married, Spouse Present	.5863	.4925	.4840	.4997	.6173	.4860
Geography						
Central City	.1884	.3910	.4295	.4950	.4585	.4983
Metro., non-Cent. City	.3996	.4898	.4299	.4951	.3962	.4891
Non-Metro. Area	.2541	.4353	.0574	.2326	.0675	.2509
Mother's Country of Birth						
U.S. and Territories	.9597	.1967	--	--	--	--
Europe	.0137	.1162	.0717	.2580	.0635	.2439
Asia	.0022	.0468	.1091	.3118	.1152	.3192
Africa	.0004	.0210	.0079	.0888	.0167	.1280
Oceania	.0010	.0323	.0055	.0741	.0044	.0662
Mexico	.0146	.1200	.5356	.4987	.5462	.4979
Central America	.0042	.0646	.2192	.4137	.2046	.4034
South America	.0011	.0325	.0542	.2265	.0535	.2251
Canada, Other N.A.	.0034	.0581	--	--	.0001	.0100
Other, not-specified	.0007	.0271	.0022	.0472	.0002	.0139

(continued)

Appendix Table 1a, continued

	Natives		Foreign-Born			
			Some U.S. Schooling		Foreign-Schooled	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Father's Country of Birth						
U.S. and Territories	.9578	.2010	--	--	--	--
Europe	.0147	.1202	.0722	.2589	.0652	.2469
Asia	.0022	.0472	.1131	.3167	.1154	.3195
Africa	.0002	.0156	.0045	.0666	.0126	.1115
Oceania	.0001	.0112	.0033	.0573	.0040	.0634
Mexico	.0163	.1265	.5337	.4989	.5431	.4981
Central America	.0038	.0616	.2161	.4116	.2061	.4045
South America	.0010	.0319	.0557	.2294	.0533	.2246
Canada, Other N.A.	.0029	.0539	--	--	.0001	.0108
Other, not-specified	.0009	.0297	.0014	.0375	.0002	.0139
Country of Birth						
U.S.	1.0000	.0000	--	--	--	--
Europe	--	--	.0702	.2554	.0620	.2412
Asia	--	--	.1084	.3109	.1149	.3189
Africa	--	--	.0050	.0705	.0130	.1132
Oceania	--	--	.0041	.0641	.0042	.0647
Mexico	--	--	.5376	.4986	.5490	.4976
Central America	--	--	.2159	.4114	.2028	.4021
South America	--	--	.0588	.2353	.0541	.2263
English-Speaking	1.0000	.0000	.0821	.2745	.0712	.2571
Entry Cohort						
1965-1969	--	--	.0902	.2865	.0227	.1490
1970-1974	--	--	.1235	.3290	.0563	.2305
1975-1979	--	--	.1731	.3783	.0887	.2844
1980-1981	--	--	.1235	.3290	.0707	.2563
1982-1983	--	--	.0707	.2564	.0467	.2110
1984-1985	--	--	.0857	.2799	.0716	.2578
1986-1987	--	--	.0666	.2493	.0668	.2496
1988-1989	--	--	.0965	.2953	.1054	.3071
1990-1991	--	--	.0728	.2599	.0953	.2936
1992-1993	--	--	.0471	.2119	.0822	.2747
1994-1995	--	--	.0276	.1637	.1025	.3034
1996-2001	--	--	.0227	.1489	.1909	.3930
Sample Size	94,158		2,492		11,402	

(continued)

Appendix Table 1b

Descriptive Statistics for Regression Samples for Women

	Natives		Foreign-Born			
			Some U.S. Schooling		Foreign-Schooled	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Wages						
Log(wage)	2.2420	.4378	2.1214	.4057	2.0304	.4037
Wage	10.4183	5.6502	9.0913	4.1803	8.3254	4.4216
Education						
GED	.0765	.2658	.0418	.2002	.0277	.1640
High School diploma	.7702	.4207	.6761	.4680	.3976	.4894
Less than 1st grade	.0019	.0437	.0008	.0275	.0252	.1568
1st - 4th grade	.0010	.0321	.0011	.0330	.0883	.2838
5th - 6th grade	.0037	.0608	.0133	.1147	.1940	.3954
7th - 8th grade	.0188	.1358	.0237	.1521	.0951	.2934
9th grade	.0289	.1676	.0514	.2209	.0760	.2650
10th grade	.0632	.2433	.0673	.2506	.0467	.2109
11th grade	.0840	.2773	.0948	.2930	.0343	.1819
12th grade	.7984	.4012	.7476	.4344	.4404	.4964
Race						
White Non-Hispanic	.7646	.4243	.1106	.3136	.1225	.3278
Black Non-Hispanic	.1641	.3704	.0878	.2831	.0954	.2938
Hispanic	.0683	.2522	.6864	.4640	.5980	.4903
Asian	.0030	.0547	.1152	.3192	.1841	.3875
Potential Experience	22.8360	11.6549	11.6357	6.5490	26.6707	10.6546
Potential Experience^4/100	6.5732	5.5944	1.7828	1.7922	8.2485	5.9636
U.S. Citizen	--	--	.4236	.4941	.3006	.4585
Married, Spouse Present	.5583	.4966	.5062	.5000	.6009	.4897
Geography						
Central City	.2044	.4033	.4106	.4919	.4453	.4970
Metro., non-Cent. City	.4012	.4901	.4507	.4976	.4231	.4941
Non-Metro. Area	.2372	.4253	.0540	.2260	.0505	.2190
Mother's Country of Birth						
U.S. and Territories	.9611	.1934	--	--	--	--
Europe	.0150	.1216	.0813	.2733	.0849	.2788
Asia	.0021	.0462	.1177	.3222	.1930	.3947
Africa	.0004	.0195	.0135	.1152	.0188	.1359
Oceania	.0011	.0332	.0083	.0910	.0052	.0721
Mexico	.0133	.1145	.4569	.4981	.3485	.4765
Central America	.0031	.0557	.2536	.4351	.2697	.4438
South America	.0007	.0270	.0750	.2634	.0846	.2783
Canada, Other N.A.	.0035	.0593	--	--	.0001	.0120
Other, not-specified	.0007	.0272	.0020	.0452	.0002	.0154

(continued)

Appendix Table 1b, continued

	Natives		Foreign-Born			
			Some U.S. Schooling		Foreign-Schooled	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Father's Country of Birth						
U.S. and Territories	.9601	.1956	.0000	.0000	.0000	.0000
Europe	.0153	.1228	.0821	.2746	.0852	.2792
Asia	.0018	.0425	.1182	.3228	.1940	.3954
Africa	.0001	.0098	.0069	.0829	.0136	.1159
Oceania	.0001	.0112	.0063	.0791	.0047	.0686
Mexico	.0142	.1184	.4566	.4981	.3462	.4758
Central America	.0032	.0566	.2530	.4347	.2706	.4443
South America	.0008	.0290	.0740	.2618	.0841	.2775
Canada, Other N.A.	.0032	.0565	.0008	.0277	.0006	.0247
Other, not-specified	.0011	.0324	.0020	.0452	.0010	.0312
Country of Birth						
U.S.	1.0000	.0000	--	--	--	--
Europe	--	--	.0790	.2697	.0853	.2793
Asia	--	--	.1173	.3217	.1921	.3940
Africa	--	--	.0090	.0945	.0134	.1150
Oceania	--	--	.0055	.0742	.0050	.0708
Mexico	--	--	.4589	.4983	.3494	.4768
Central America	--	--	.2515	.4339	.2702	.4441
South America	--	--	.0789	.2695	.0846	.2783
English-Speaking	1.0000	.0000	.1077	.3101	.1215	.3267
Entry Cohort						
1965-1969	--	--	.1040	.3052	.0344	.1823
1970-1974	--	--	.1679	.3738	.0698	.2548
1975-1979	--	--	.1944	.3957	.1030	.3040
1980-1981	--	--	.1409	.3479	.0868	.2815
1982-1983	--	--	.0640	.2448	.0526	.2231
1984-1985	--	--	.0686	.2527	.0731	.2604
1986-1987	--	--	.0718	.2582	.0705	.2560
1988-1989	--	--	.0617	.2407	.0989	.2985
1990-1991	--	--	.0555	.2290	.0975	.2966
1992-1993	--	--	.0345	.1826	.0852	.2792
1994-1995	--	--	.0192	.1372	.0842	.2777
1996-2001	--	--	.0175	.1310	.1440	.3511
Sample Size	100,213		2,108		12,198	

Source: Calculations using weighted CPS Outgoing Rotation Groups from January 1998-December 2001.
Note: Regressions also include a quartic in calendar time from January 1998, month-of-year dummy variables, and state-of-residence dummy variables.

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